

## ABSTRACT OF THE DISCLOSURE

A millimeter wave band communication apparatus includes a millimeter wave band transmitter receiving a plurality of input modulation signal waves to transmit a millimeter wave band multiplex signal wave, and  
5 a millimeter wave band receiver receiving the transmitted millimeter wave band multiplex signal wave to restore the plurality of input modulation signal waves. The millimeter wave band transmitter includes a frequency arranging circuit generating a multiplex signal wave having respective frequency bands of the plurality of input modulation signal waves arranged  
10 on the frequency axis independent of each other, a frequency up-converter up-converting the generated multiplex signal wave to the millimeter wave band, and a transmission circuit transmitting the millimeter wave band multiplex signal wave. The millimeter wave band receiver includes a reception circuit receiving the millimeter wave band multiplex signal wave,  
15 a frequency down-converter down-converting the millimeter wave band multiplex signal wave from the millimeter wave band, and a frequency rearranging circuit restoring the down-converted multiplex signal wave into the plurality of input modulation signal waves respectively having the former frequency bands.